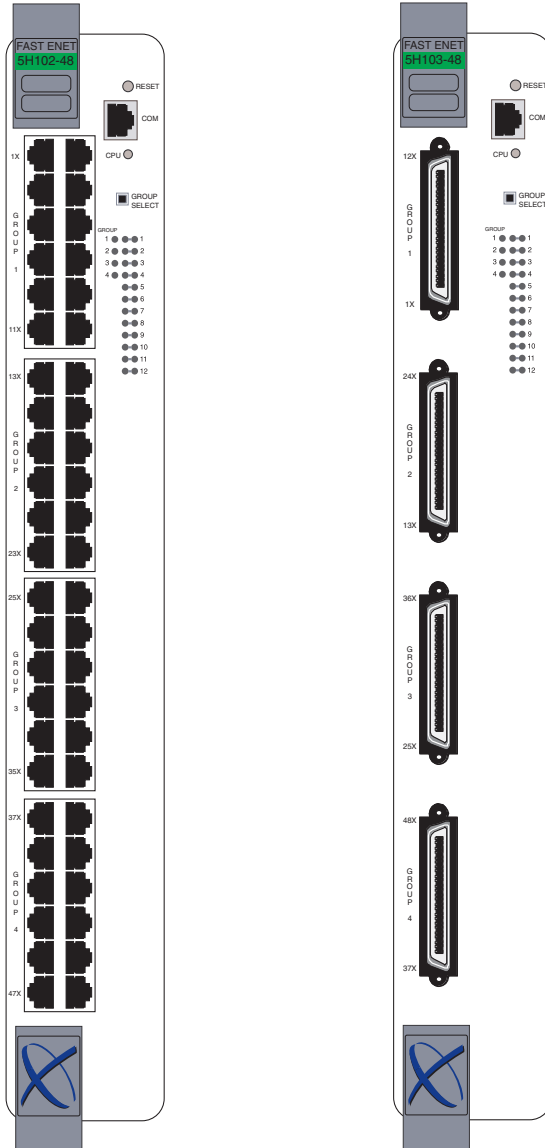


# 5H102-48 and 5H103-48 Fast Ethernet Installation Guide







**ELECTRICAL HAZARD:** Only qualified personnel should perform installation procedures.

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**73/23/EEC**

Manufacturer's Name: **Enterasys Networks, Inc.**

Manufacturer's Address: **35 Industrial Way**  
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**London Road, Newbury**  
**Berkshire RG14 2PZ, England**

Conformance to Directive(s)/Product Standards: **EC Directive 89/336/EEC**  
**EC Directive 73/23/EEC**  
**EN 55022**  
**EN 55024**  
**EN 60950**  
**EN 60825**

Equipment Type/Environment: **Networking Equipment, for use in a Commercial  
or Light Industrial Environment.**

We the undersigned, hereby declare, under our sole responsibility, that the equipment packaged with this notice conforms to the above directives.

Manufacturer

Legal Representative in Europe

Mr. Tom Whissel

Mr. Jim Sims

Full Name

Full Name

Compliance Engineering Manager

President - E.M.E.A.

Title

Title

Rochester, NH, USA

Newbury, Berkshire, England

Location

Location





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# About This Guide

Welcome to the **5H102-48 and 5H103-48 Fast Ethernet Installation Guide**. This guide describes the Fast Ethernet modules and provides information concerning network requirements, installation, and troubleshooting. For information about how to use Local Management to configure and manage the module, refer to the *MATRIX E5 Series Modules (5H1xx and 5G1xx) Local Management User's Guide*.

---

## Important Notice

Depending on the firmware version used in the module, some features described in this document may not be supported. Refer to the Release Notes shipped with the module to determine which features are supported.

---

## USING THIS GUIDE

Read through this guide to completely understand the module capabilities and how to install the modules.

A general working knowledge of Ethernet and IEEE 802.3 type data communications networks and their physical layer components is helpful when using this module.



**NOTE:** In this document, the 5H102-48 or 5H103-48 may be referred to as either the “switch,” or the “module.” When information applies to a specific module, the module will be referred to by its name.

A lowercase italic *x* indicates the generic use of a letter (e.g., *xxx* indicates any combination of three alphabetic characters).

## STRUCTURE OF THIS GUIDE

This guide is organized as follows:

This chapter provides preliminary information to aid in using this manual, lists technology and user guides that may help the user set up and manage the module, and gives instructions on how to get help.

**Chapter 1, Introduction**, provides an overview of the modules and their features.

**Chapter 2, Network Requirements**, outlines the network requirements that must be met before installing the module.

**Chapter 3, Installation**, provides instructions on how to install the module, and connect segments to the modules.

**Chapter 4, Troubleshooting**, describes the function of the LANVIEW LEDs, which can help to quickly diagnose network/operational problems.

**Appendix A, Specifications**, contains information on functionality and operating specifications, connector pinouts, environmental requirements, and physical properties.

**Appendix B, Mode Switch Bank Settings and Options**, describes how to set the Mode Switch and install options.

## **RELATED DOCUMENTS**

The following documents can help in setting up and manage the module:

- *MATRIX E5 Series Modules (5H1xx and 5G1xx) Local Management User's Guide*
- *5C105 MATRIX E5 Overview and Setup Guide*
- *Ethernet Technology Guide*
- *Cabling Guide*

The manuals listed above can be obtained from the World Wide Web in Adobe Acrobat Portable Document Format (PDF) at the following site:

**<http://www.enterasys.com>**

## DOCUMENT CONVENTIONS

The guide uses the following conventions:



**NOTE:** Calls the reader's attention to any item of information that may be of special importance.



**TIP:** Conveys helpful hints concerning procedures or actions.



**CAUTION:** Contains information essential to avoid damage to the equipment.



**ELECTRICAL HAZARD:** Warns against an action that could result in personal injury or death due to an electrical hazard.



**WARNING:** Warns against an action that could result in personal injury or death.

## GETTING HELP

For additional support related to the product or this document, contact Enterasys Networks using one of the following methods:

---

World Wide Web	<a href="http://www.enterasys.com/">http://www.enterasys.com/</a>
Phone	(603) 332-9400
Internet mail	<a href="mailto:support@enterasys.com">support@enterasys.com</a>
FTP	<a href="ftp://ftp.enterasys.com">ftp://ftp.enterasys.com</a>
Login	<i>anonymous</i>
Password	<i>your email address</i>

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To send comments or suggestions concerning this document, contact the Technical Writing Department via the following email address: **TechWriting@enterasys.com**

Make sure to include the document Part Number in the email message.

---

### **Before contacting Enterasys Networks, have the following information ready:**

- Your Enterasys Networks service contract number
- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Enterasys Networks products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers



---

# Introduction

This chapter introduces the 5H102-48 and 5H103-48 Fast Ethernet modules.

---

## Important Notice

Depending on the firmware version used in the module, some features described in this document may not be supported. Refer to the Release Notes shipped with the module to determine which features are supported.

---

The 5H102-48 module ([Figure 1-1](#)) features 48 10BASE-T/100BASE-TX switched ports connected through 48 RJ45 front panel connectors.

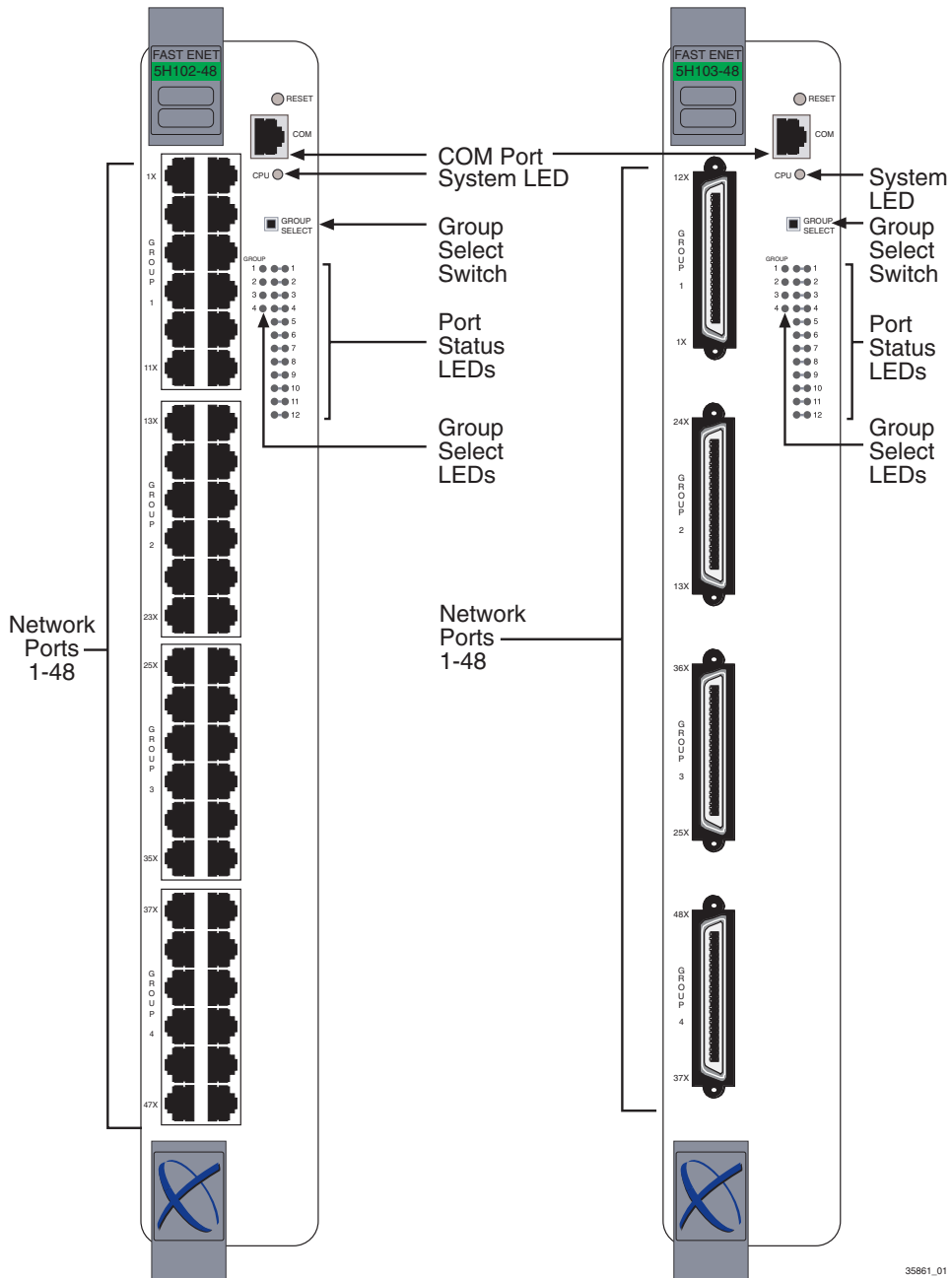
The 5H103-48 module ([Figure 1-1](#)) features 48 10BASE-T/100BASE-TX switched ports connected through 4 RJ21 front panel connectors.

Each of the fixed front panel ports can operate in either half-duplex or full-duplex mode of operation, as determined by auto-negotiation. Full-duplex can also be manually configured.

The module ports can be configured to control traffic in several ways, including prioritizing traffic flow according to protocol type. The module can also be configured to establish 802.1Q Virtual Local Area Networks (VLANs) and control the flow of frames associated with each VLAN according to priority and Ether type. Detailed information about VLANs is provided in the *MATRIX E5 Series Modules Local Management User's Guide*.

The module receives power and backplane connectivity when it is inserted into a 5C105 MATRIX E5 chassis.

**Figure 1-1 The 5H102-48 and 5H103-48 Modules**



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## 1.1 CONNECTIVITY

The module connects to Ethernet networks or workstations through the front panel connectors. The ports support Unshielded Twisted Pair (UTP) cables with an impedance between 85 and 111 ohms at lengths up to 100 meters. The ports are IEEE 802.3 10BASE-T and 100BASE-TX compliant.

## 1.2 HALF-DUPLEX/FULL-DUPLEX AUTO-NEGOTIATION

The fixed front panel ports on the module have the ability to auto-negotiate the ports' mode of operation (half-duplex or full-duplex) between two devices according to IEEE 802.3 standards. During Auto-Negotiation, two devices automatically exchange information "telling" each other their current operating mode. The Auto-Negotiation feature targets the maximum capability that can be reached between the two devices. For example, the module can adjust to full-duplex operation when the device on the other end of the connection can also adjust from half-duplex to full-duplex. If the device on the other end of the connection can only operate in half-duplex mode, then the module simply adjusts to operate in half-duplex mode.

## 1.3 PORT TRUNKING

Port Trunking is used for load balancing or load sharing. Port Trunking provides a mechanism to group, or aggregate, multiple links of any technology together to scale the backbone bandwidth beyond the limitations of a single link. All links are user-configurable so administrators can scale the backbone bandwidth by adding Port Trunking. The benefits of Port Trunking include the following:

- All purchased bandwidth is used.
- Distributed, resilient links increase reliability and performance.
- Multiple technologies are supported within a single trunk for maximum flexibility.

## 1.4 REMOTE MONITORING (RMON)

The module supports the 1, 2, 3, and 9 Ethernet RMON groups. The Statistics, Alarms, Events and History groups are enabled on all ports by default.

The Enterasys Networks RMON Actions is a vendor-specific extension of RMON and provides the ability to set an "Action" on any SNMP MIB variable. The Action can be triggered by any RMON Event and/or Alarm. An example of an Action would be to turn off a MIB-2 interface if a broadcast threshold is crossed.

## 1.5 PORT/VLAN REDIRECT FUNCTION

The port redirect function, also referred to as “Port Mirroring,” is a troubleshooting tool used to map traffic from a single source port to a single destination port within the module. This feature allows frames, including those with errors, to be copied and sent to an analyzer or RMON probe. The analyzer or RMON probe will see the data as if it were directly connected to the LAN segment of the source port.

The VLAN redirect function is similar to the port redirect function except that the frames received by the module are redirected to a designated destination port according to the VLAN classification of the frames received. Multiple VLANs can be directed to the same destination port. The VLAN redirect function is only supported when the module is operating as an 802.1Q switch.

## 1.6 FLOW CONTROL

Flow control is a method of managing the flow of frames between two devices. It ensures that a transmitting device does not overwhelm a receiving device with data. This is accomplished by the transmitting device pausing its transmission while the receiving device processes the frames already received.

The module supports frame-based 802.3x flow control. Frame-based 802.3x flow control is supported on all Ethernet ports operating in the full-duplex mode. Flow control can be enabled or disabled on a port-by-port basis.

Back pressure flow control is not supported on ports operating in the half-duplex mode.

## 1.7 802.1 PORT PRIORITY

The 802.1 port priority is used to assign a default priority to the frames received without priority information in their tag header, map prioritized frames to the appropriate transmit queues, and prioritize frames according to protocol type. The 802.1 port priority is part of the IEEE 802.1D standard.

## 1.8 MANAGEMENT

Management of the module can be either in-band or out-of-band. In-band remote management is possible through any SNMP-compliant Network Management Software, such as Enterasys Networks’ NetSight and Aprisma Management Technology’s SPECTRUM for Open Systems suite of management products. In-band management using Telnet and Enterasys Networks’ Webview is also provided. Out-of-band Local Management is provided through the RJ45 COM port on the front panel using a VT100 terminal or a VT100 terminal emulator.

Local Management provides the ability to manage the module. Refer to the *MATRIX E5 Series Modules Local Management User’s Guide* for more information.

## 1.9 SWITCHING OPTIONS

The module provides 802.1Q switching between all of the front panel interfaces. In the 802.1Q mode (the default mode of operation), the module functions as an 802.1D switch until you configure VLANs. Up to 1024 VLANs can be configured.

IEEE 802.1Q switching allows migration to Virtual Network technologies without requiring the replacement of existing equipment.

## 1.10 STANDARDS COMPATIBILITY

The 5H102-48 and 5H103-48 modules are fully compliant with the IEEE 802.3, 802.3u, 802.3x, 802.1D, and 802.1Q standards. The modules provide IEEE 802.1D Spanning Tree Algorithm (STA) support to enhance the overall reliability of the network and protect against “loop” conditions. The modules support a wide variety of industry standard MIBs including RFC 2737 (MIB I), RFC 1213 (MIB II), RFC 1757 (RMON), and RFC 1493 (Bridge MIB). A full suite of Enterasys Networks Enterprise MIBs provide a wide array of statistical information to enhance troubleshooting. For information on how to extract and compile individual MIBs, contact Enterasys Networks.

## 1.11 LANVIEW DIAGNOSTIC LEDs

LANVIEW diagnostic LEDs serve as an important troubleshooting aid by providing an easy way to observe the status of individual ports and overall network operations.



---

# Network Requirements

Before installing the module, review the requirements and specifications referred to in this chapter concerning the following:

- Port Trunking ([Section 2.1](#))
- 10BASE-T Twisted Pair Network ([Section 2.2](#))
- 100BASE-T Twisted Pair Network ([Section 2.3](#))

The network installation must meet the requirements to ensure satisfactory performance of this equipment. Failure to do so will produce poor network performance.



**NOTE:** The *MATRIX E5 Series Modules Local Management User's Guide* and *Cabling Guide* referred to in the following sections can be found on the Enterasys Networks World Wide Web site: <http://www.enterasys.com/>

## 2.1 PORT TRUNKING FEATURE

Before connecting the module to a network so it can take advantage of the Port Trunking feature, there are certain rules concerning port connections and configurations that must be followed for proper operation. Refer to the *MATRIX E5 Series Modules Local Management User's Guide* for additional information.

## 2.2 10BASE-T NETWORK

When connecting a 10BASE-T segment to any of the module ports (1 through 48), ensure that the network meets the Ethernet network requirements of the IEEE 802.3 standard for 10BASE-T. Refer to the *Cabling Guide* for details.



**NOTE:** If a port is to operate at 100 Mbps, Category 5 cabling must be used. Category 3 cabling does not meet 100 Mbps specifications. For 10 Mbps operation only, Category 3 or Category 5 cabling can be used. Refer to [Section 2.3](#) for information about 100BASE-TX networks and cabling.

## 2.3 100BASE-TX NETWORK

The fixed front panel ports of the module provide a connection that supports Category 5 UTP cabling. The device at the other end of the twisted pair segment must meet IEEE 802.3u 100BASE-TX Fast Ethernet network requirements for the devices to operate at 100 Mbps. Refer to the *Cabling Guide* for details.



**NOTE:** The fixed ports of the module support Category 5 UTP cabling with an impedance between 85 and 111 ohms for 100 Mbps operation.

The module is capable of operating at either 10 or 100 Mbps. The module automatically senses the speed of the other device and adjusts its speed accordingly.





**ELECTRICAL HAZARD:** Only qualified personnel should install the module.



**NOTE:** Read the Release Notes shipped with the module to check for any exceptions to the supported features and operation documented in this guide.

This chapter provides the instructions to install the 5H102-48 or 5H103-48 module. A Phillips screwdriver is required to install options into the module. Follow the order of the sections listed below to correctly install the module.

- Unpacking the Module ([Section 3.1](#))
- Installing the Module into the 5C105 MATRIX E5 Chassis ([Section 3.2](#))
- Connecting to the Network ([Section 3.3](#))
- Completing the Installation ([Section 3.4](#))

## 3.1 UNPACKING THE MODULE

Unpack the module as follows:

1. Open the box and remove the packing material protecting the module.
2. Verify the contents of the carton as listed in [Table 3-1](#).

**Table 3-1** Contents of Module Carton

Item	Quantity
One module, either the 5H102-48 or the 5H103-48	1
Antistatic Wrist Strap	1
RJ21 Angle Adapter	4
Manual Accessory Kit	1

3. Remove the tape seal on the non-conductive bag to remove the module.
4. Perform a visual inspection of the module for any signs of physical damage. Contact Enterasys Networks if there are any signs of damage. Refer to [Getting Help](#) for details.

## 3.2 INSTALLING THE MODULE INTO THE 5C105 CHASSIS



**CAUTION:** Failure to observe static safety precautions could cause damage to the module. Follow static safety handling rules and wear the antistatic wrist strap provided with the 5C105 Chassis.

Do not cut the non-conductive bag to remove the module. Sharp objects contacting the board or components can cause damage.

To install a module, refer to [Figure 3-1](#) and proceed as follows:

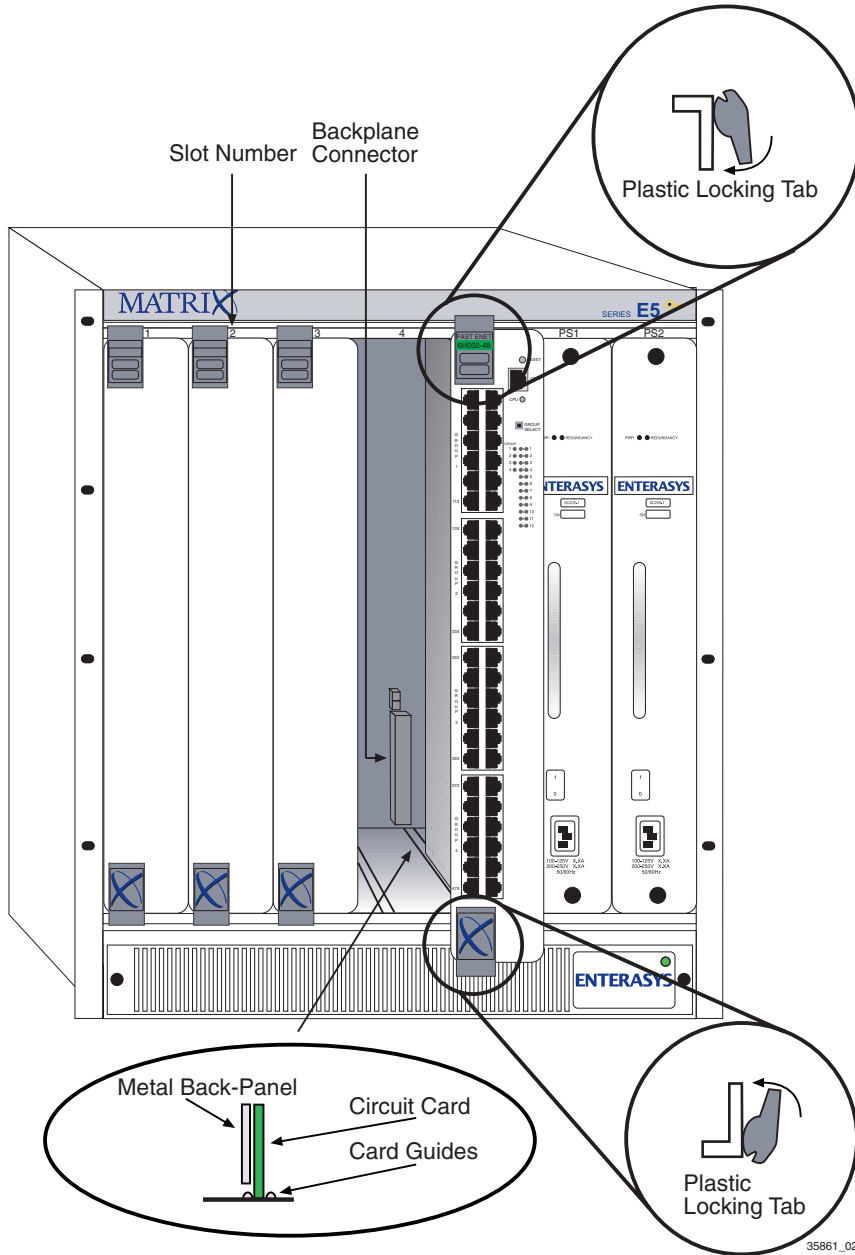
1. Remove the blank panel covering the slot in which the module will be installed. All other slots must remain covered to ensure proper airflow and cooling. (Save the blank plate in the event you need to remove the module.)
2. Carefully remove the module from the shipping box. (Save the box and packing materials in the event the module must be reshipped.)
3. Locate the antistatic wrist strap shipped with the module. Attach the antistatic wrist strap to your wrist and plug the cable from the antistatic wrist strap into the ESD grounding receptacle at the upper right corner of the chassis.
4. Remove the module from the plastic bag. (Save the bag in the event the module must be reshipped.) Observe all precautions to prevent damage from Electrostatic Discharge (ESD).
5. Examine the module for damage. If any damage exists, DO NOT install the module. Immediately contact Enterasys Networks. Refer to [Getting Help](#), in [About This Guide](#).



**CAUTION:** To prevent damaging the backplane connectors in the following step, take care that the module slides in straight and properly engages the backplane connectors.

Ensure that the top plastic locking tab lines up with the desired slot number located on the front panel of the chassis. Refer to [Figure 3-1](#).

Figure 3-1 Installing a Module into the 5C105 Chassis



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6. Locate the slot guides that line up with the number of the slot in which the module will be installed. Install the module in the chassis by aligning the module circuit card between the upper and lower metal rail guides of the desired slot, sliding it into the chassis, and locking down the top and bottom plastic locking tabs, as shown in [Figure 3-1](#). Take care that the module slides in straight and properly engages the backplane connectors.
7. If the chassis in which the module is installed was powered down for the installation, turn it back on. Check to see that the CPU LED settles at solid green after a few minutes. If the LED does not turn solid green, see [Chapter 4](#) for details.

### 3.3 CONNECTING TO THE NETWORK

This section provides the procedures for connecting unshielded twisted pair (UTP) segments from the network or other devices to the 5H102-48 ([Section 3.3.1](#)), or the 5H103-48 ([Section 3.3.2](#)). For details on how to get manuals, refer to the [Related Documents](#) section in [About This Guide](#).



**NOTE:** If the module is being installed in a network using Port Trunking, there are rules concerning the network cable and port configurations that must be followed for Port Trunking to operate properly. Before connecting the cables, refer to the *MATRIX E5 Series Modules Local Management User's Guide* for the configuration information.

#### 3.3.1 Connecting UTP Cables to the 5H102-48

The fixed front panel ports of the 5H102-48 are 10/100 RJ45 ports with internal crossovers. When connecting a workstation to these ports, use a straight-through cable. When connecting networking devices to these ports, such as a bridge, repeater, or router, use a crossover cable.

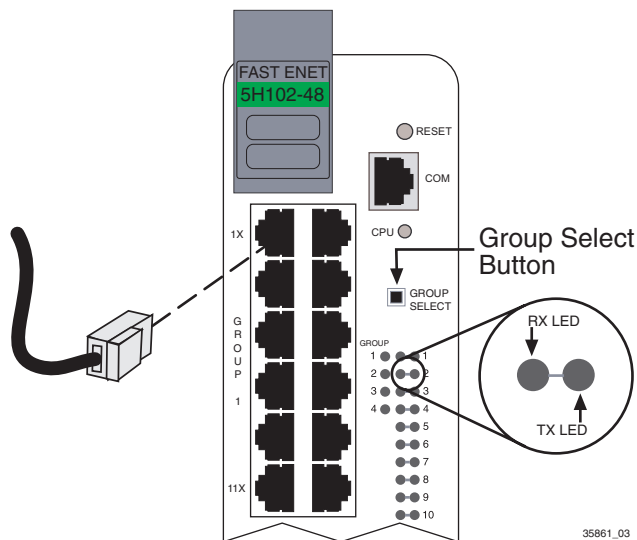


**NOTE:** All RJ45 front panel ports on the 5H102-48 support Category 5 Unshielded Twisted Pair (UTP) cabling with an impedance between 85 and 111 ohms. Category 3 cable may be used if the connection is going to be used only for 10 Mbps.

Connect a twisted pair segment to the 5H102-48 as follows:

1. Ensure that the device connected to the other end of the segment is powered ON.
2. Connect the twisted pair segment to the 5H102-48 by inserting the RJ45 connector on the twisted pair segment into the desired RJ45 port as shown in [Figure 3-2](#).

**Figure 3-2** Connecting a Twisted Pair Segment to the 5H102-48



3. Verify that a link exists by checking that the port **RX** (Receive) LED is ON (flashing amber, blinking green, or solid green). If the **RX** LED is OFF and the **TX** (Transmit) LED is not blinking amber, perform the following steps until it is on:
  - a. To view the receive and transmit activity on a group of segments, press the **GROUP SELECT** button (see [Figure 3-2](#)) to step to the group of interest (Groups 1 through 4). Each time the **GROUP SELECT** button is pressed, the **GROUP LED** lights up in sequence, indicating which Group is selected. The receive and transmit activity for that group of segments is then indicated by the **RX** and **TX** LEDs for each segment.
  - b. Verify that the cabling being used is Category 5 UTP with an impedance between 85 and 111 ohms. If the port is to operate at 100 Mbps, category 5 cabling must be used.
  - c. Verify that the device at the other end of the twisted pair segment is on and properly connected to the segment.
  - d. Verify that the RJ45 connectors on the twisted pair segment have the proper pinouts ([Figure 3-3](#) and [Figure 3-4](#)) and check the cable for continuity. Typically, a crossover cable is used between hub devices. A straight-through cable is used to connect between switches or hub devices and an end user (computer).

Figure 3-3 Crossover Cable RJ45 Pinouts

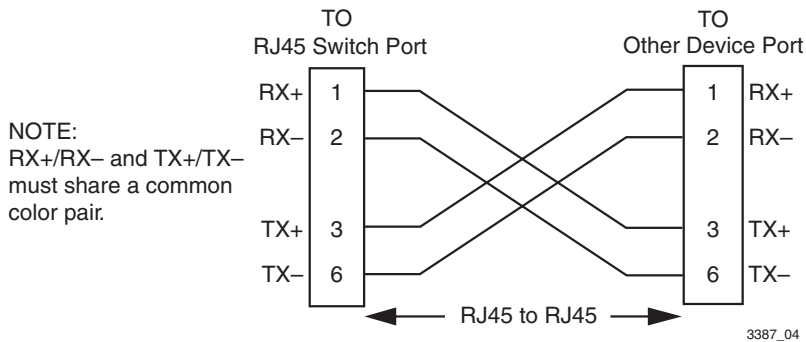
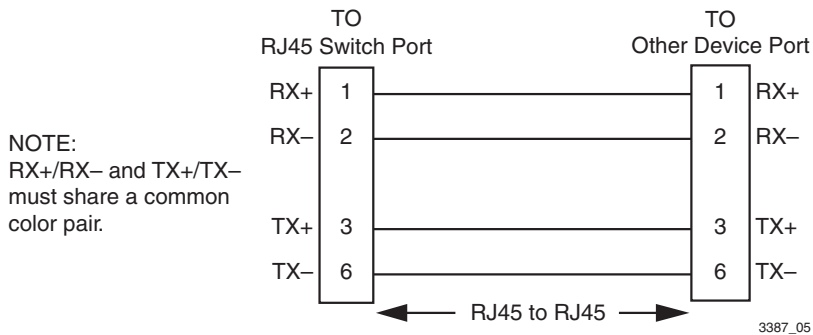


Figure 3-4 Straight-Through Cable RJ45 Pinouts



- e. Ensure that the twisted pair connection meets the dB loss and cable specifications outlined in the *Cabling Guide*. Refer to [About This Guide](#) for information on obtaining this document.

If a link is not established, contact Enterasys Networks. Refer to [Getting Help](#) in [About This Guide](#) for details.

4. Repeat all the steps above until all connections have been made.

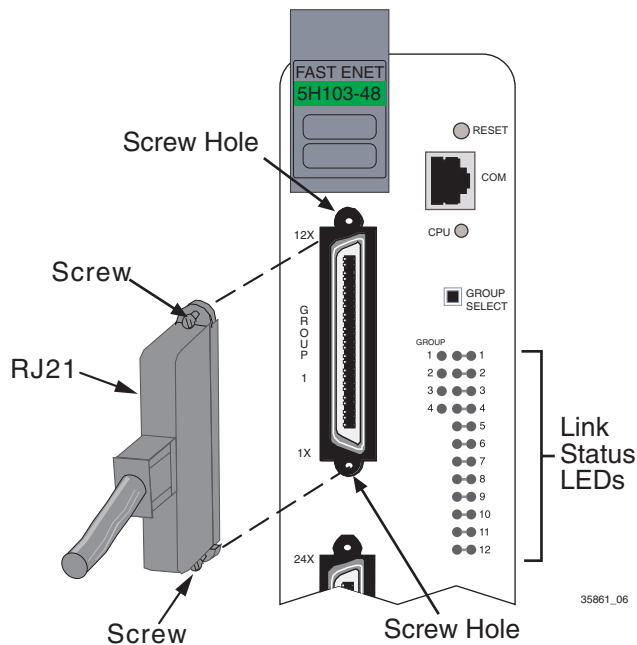
### 3.3.2 Connecting UTP Cables to the 5H103-48

When facing the front panel of the 5H103-48, the RJ21 connectors from top to bottom represent Ethernet/Fast Ethernet segments 1 through 12, segments 13 through 24, 25 through 36, and 37 through 48, respectively.

To connect a UTP segment to the 5H103-48, proceed as follows:

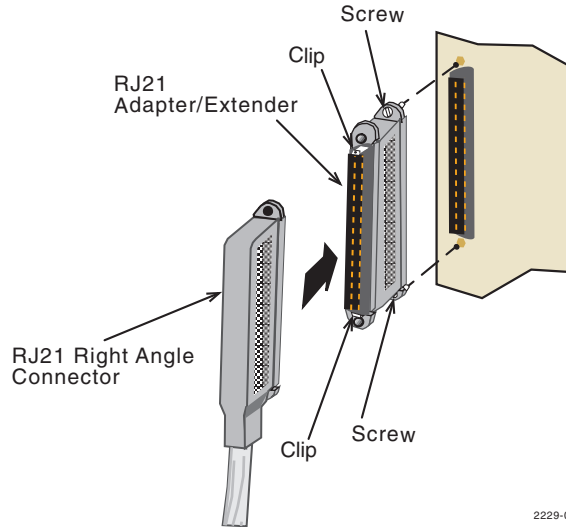
1. Ensure that the device connected to the other end of the segment is powered ON.
2. If using an RJ21 straight connector, plug it into the appropriate RJ21 port as shown in [Figure 3-5](#). If using an RJ21 angle adapter supplied with the switch, insert the angle adapter as shown in [Figure 3-6](#). The RJ21 angle adapter allows the cables to be positioned along the front of the device when using a right angle RJ21 connector. See example in [Figure 3-7](#).

**Figure 3-5** Connecting a Twisted Pair Segment to the 5H103-48

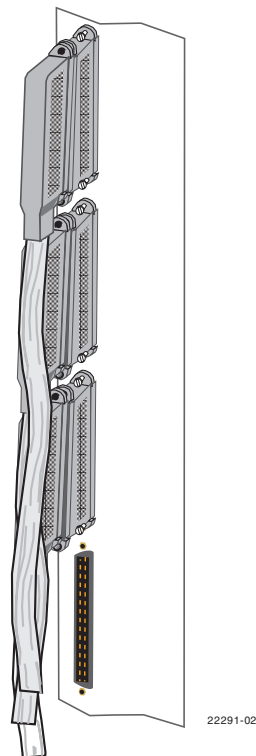




**Figure 3-6 Connection Using the RJ21 Angle Adapter**



**Figure 3-7 Example of Cable Placement When Using the RJ21 Angle Adapters**



3. Tighten the two screws on the RJ21 connector, as applicable, to secure it to the module.

If using the RJ21 angle adapter, plug in the RJ21 right-angled connector until the two retaining clips, shown in [Figure 3-7](#), snap into place.



**NOTE:** The cable pinouts for a 25-pair cable (RJ21) can be found in the *Cabling Guide*. Refer to [Related Documents](#) in [About This Guide](#) for details on how to obtain this document.

4. Verify that a link exists by checking that the port **Link** LEDs are on (flashing amber, blinking green, or solid green). If any of the **Link** LEDs are off, perform the following steps until they are on:
  - a. Verify that the device at the other end of the twisted pair segment is ON and connected to the segment.
  - b. Verify that the RJ21 connectors on the twisted pair segment have the proper pinouts and check the cable for continuity.
  - c. Check that the twisted pair connection meets the specifications in the *Cabling Guide*.

If a link is not established, contact Enterasys Networks. Refer to [Getting Help](#) in [About This Guide](#) for details.

5. Repeat all the steps above until all RJ21 connections are made.

### 3.4 COMPLETING THE INSTALLATION

After installing the module and making the connections to the network, proceed as follows:

1. If the chassis is installed in a rack that has strain-relief brackets, secure the cables by running the cables along the strain-relief bracket and tying them to the bracket using cable ties.
2. The module is now ready to be configured through Local Management. Refer to the *MATRIX E5 Series Modules Local Management User's Guide* for information on how to access and use Local Management. For details on how to get manuals, refer to the [Related Documents](#) section in [About This Guide](#).

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# Troubleshooting

This chapter provides information concerning the following:

- Using LANVIEW (Section 4.1)
- Troubleshooting Checklist (Section 4.2)
- Using the RESET Button (Section 4.3)

## 4.1 USING LANVIEW

The modules use a built-in visual diagnostic and status monitoring system called LANVIEW. The LANVIEW LEDs (Figure 4-1) allow quick observation of the network status to aid in diagnosing network problems.

### Viewing Receive and Transmit Activity

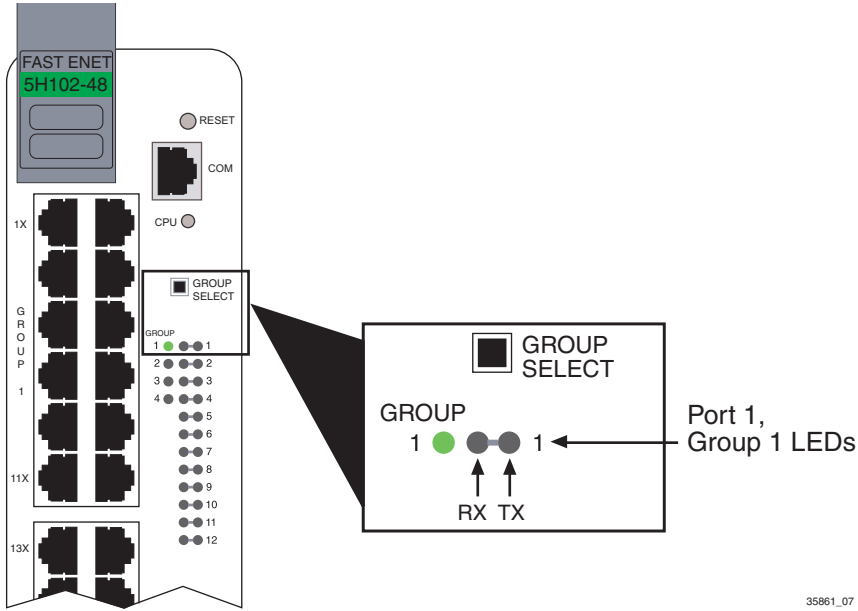
Only one group of segments may be viewed at a time.

To view the receive and transmit activity on a group of segments, press the GROUP SELECT button (see Figure 4-1) to step to the group of interest (Groups 1 through 4). Each time the GROUP SELECT button is pressed, the GROUP LED lights up in sequence, indicating which Group is selected. The receive and transmit activity for that group of segments is then indicated by the RX and TX LEDs for each segment.

### Fast Ethernet Speed LED

This LED indicates whether the port is in 10 Mbps or 100 Mbps Ethernet. When the LED is off, the port is functioning at 10 Mbps. When the LED is on solid green, the speed is 100 Mbps.

Figure 4-1 LANVIEW LEDs (both modules)



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Table 4-1 describes the LED indications and provides recommended actions as appropriate.



**NOTE:** The terms **flashing**, **blinking**, and **solid** used in Table 4-1 indicate the following:

**Flashing** indicates an LED is flashing randomly.

**Blinking** indicates an LED is flashing at a steady rate (approximately 50% on, 50% off).

**Solid** indicates a steady LED light. No pulsing.

Table 4-1 LANVIEW LEDs

LED	Color	State	Recommended Action
CPU	Off	Power off.	Ensure chassis has adequate power.
	Red	<b>Solid.</b> Hardware failure has occurred.	If the LED remains red for several minutes, contact Enterasys Networks for technical support.
	Amber	<b>Blinking.</b> Image is being loaded from Flash.	None.
		<b>Solid.</b> Boot PROM diagnostics are running.	If the LED remains amber for more than several minutes, contact Enterasys Networks for technical support.
	Green	<b>Solid.</b> Unit is functional.	None.
Amber and Green	<b>Booting.</b> Blinks amber and green while image is loading.	None.	
RX (Receive)	Off	<b>No link.</b> No activity or port in standby. Port enabled or disabled.	None.
	Green	<b>Solid.</b> Link, port enabled, no activity.	None.
		<b>Blinking.</b> Link, port disabled.	None.
	Amber	<b>Flashing.</b> Link, port enabled, activity.	None.
Red	<b>Solid.</b> Diagnostic failure.	Contact Enterasys Networks for assistance.	

Table 4-1 LANVIEW LEDs (Continued)

LED	Color	State	Recommended Action
TX (Transmit)	Off	Port enabled, and no activity.  Should flash green every two seconds indicating BPDUs being sent if STA is enabled and there is a valid link.	<ol style="list-style-type: none"> <li>1. Ensure that the STA is enabled and that there is a valid link.</li> <li>2. Contact Enterasys Networks for technical support.</li> </ol>
	Green	<b>Flashing.</b> Indicates activity. Rate indicates data rate.	None.
	Amber	<b>Blinking.</b> Port may be disabled due to Spanning Tree.	<ol style="list-style-type: none"> <li>1. Ensure that the port is not disabled.</li> <li>2. Contact Enterasys Networks for technical support.</li> </ol>
	Red	<b>Flashing.</b> Indicates collision rate.	None, unless there is a high amount of activity. In this case, check for network configuration problems or a defective device.
		<b>Solid.</b> Diagnostic failure.	Contact Enterasys Networks for technical support.
Speed	Off	Port is in 10 Mbps (10BASE-T).	None.
	Green	<b>Solid.</b> Port is in 100 Mbps (100BASE-TX).	None.

## 4.2 TROUBLESHOOTING CHECKLIST

If the module is not working properly, refer to [Table 4-2](#) for a checklist of problems, possible causes, and recommended actions to resolve the problem.

**Table 4-2 Troubleshooting Checklist**

Problem	Possible Cause	Recommended Action
All LEDs are OFF.	Loss of power.	Ensure that the module was installed properly according to the installation instructions in <a href="#">Chapter 3</a> , and that the host chassis is powered properly.
No Local Management Password screen.	Autobaud is enabled, but the baud rate has not yet been detected.	Press ENTER (RETURN) (may take up to four times).
	Incorrect terminal setup.	Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for proper setup procedures.
	Improper console cable pinouts.	Refer to <a href="#">Appendix A</a> for proper COM port pinouts.
	Corrupt firmware image, or hardware fault.	If possible, attempt to download the image to the module again. Refer to <a href="#">Section B.2</a> for instructions to clear NVRAM.
Cannot navigate beyond Password screen.	Improper Community Names Table.	<ol style="list-style-type: none"> <li>1. Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for the Community Names Table setup.</li> <li>2. If the Community Names have been forgotten, refer to <a href="#">Section B.2</a> for instructions on how to set the mode switch to reset the Community Names to their default values.</li> </ol>

**Table 4-2 Troubleshooting Checklist (Continued)**

Problem	Possible Cause	Recommended Action
Cannot contact the module through in-band management.	IP address not assigned.	Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for the IP address assignment procedure.
	Port is disabled.	Enable port. Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for instructions to enable/disable ports.
	No link to device.	<ol style="list-style-type: none"> <li>1. Verify that all network connections between the network management station and the module are valid and operating.</li> <li>2. If the problem continues, contact Enterasys Networks for technical support.</li> </ol>
Port(s) goes into standby for no apparent reason.	Loop condition detected.	<ol style="list-style-type: none"> <li>1. Verify that Spanning Tree is enabled. Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for the instructions to set the type of STA.</li> <li>2. Review the network design and delete unnecessary loops.</li> <li>3. If the problem continues, contact Enterasys Networks for technical support.</li> </ol>
User parameters (IP address, Device and Module name, etc.) were lost when the module power was cycled or the front panel RESET button was pressed.	<ol style="list-style-type: none"> <li>1. Position of Mode switch (7), NVRAM Reset, was changed sometime before either cycling power or pressing the RESET button, causing the user-entered parameters to reset to factory default settings.</li> <li>2. Clear NVRAM was set through Local Management.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reenter the lost parameters as necessary. Refer to the <i>MATRIX E5 Series Modules Local Management User's Guide</i> for the instructions to configure the device through Local Management.</li> <li>2. If the problem continues, contact Enterasys Networks for technical support.</li> </ol>



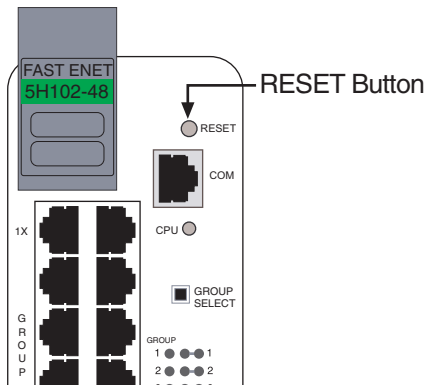
## 4.3 USING THE RESET BUTTON

The RESET button shown in [Figure 4-2](#) resets and re-initializes the module.



**CAUTION:** Pressing the RESET button resets the device, and all current switching being performed by the module is halted. A network downtime of up to two minutes will result from this action for any devices connected to the module.

**Figure 4-2** RESET Button (both modules)



To reset the module processor, press and release the RESET button. The module goes through a reset process for approximately 60 seconds. Additional downtime may result as the module reenters the network.



**NOTE:** Pressing the RESET button while the module is already in reset mode is not recommended. If the RESET button is pressed while the module is in reset mode, the module will enter an extended diagnostic procedure, which is unnecessary for normal operation. This extended diagnostic procedure takes longer than one minute to complete.



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## Specifications

This appendix provides operating specifications for the 5H102-48 and 5H103-48 modules. Enterasys Networks reserves the right to change the specifications at any time without notice. If not specified by module name, the statistics are the same for both modules.

### A.1 MODULE SPECIFICATIONS

Processors:	Motorola 850 SE
Dynamic Random Access Memory (DRAM):	8 MB
FLASH Memory:	2 MB

### A.2 PHYSICAL PROPERTIES

Dimensions:	46.43 H x 6.05 W x 29.51 D (cm) 18.28 H x 2.38 W x 11.62 D (in)
Approximate Weight (Unit):	2.04 kg (4.5 lb)
MTBF (Predicted):	
5H102-48	224,246 hours
5H103-48	225,115 hours

### A.3 ENVIRONMENTAL REQUIREMENTS

Operating Temperature:	5°C to 40°C (41°F to 104°F)
Storage Temperature:	-30°C to 73°C (-22°F to 164°F)
Operating Relative Humidity:	5% to 90% (non-condensing)

## A.4 INPUT/OUTPUT PORTS

### 5H102-48:

Ports 1 through 48: Fast Ethernet 10/100 Mbps (10BASE-T and 100BASE-TX compliant) with 48 RJ45 connectors.

### 5H103-48:

Ports 1 through 48: Fast Ethernet 10/100 Mbps (10BASE-T and 100BASE-TX compliant) with 4 RJ21 connectors (12 ports per connector).

## A.5 COM PORT PINOUT ASSIGNMENTS

The COM port is a serial communications port that supports Local Management. [Table A-1](#) shows the COM port pin assignments.

**Table A-1** COM Port Pin Assignments

Pin	Signal Name	Input/Output
1	Transmit Data (XMT)	Output
2	Data Carrier Detect (DCD)	Output
3	Data Set Ready (DSR)	Input
4	Receive Data (RCV)	Input
5	Signal Ground (GND)	NA
6	Data Terminal Ready (DTR)	Output
7	Request to Send (RTS)	Input
8	Clear to Send (CTS)	NA

## A.6 REGULATORY COMPLIANCE

The 5H102-48 and 5H103-48 modules meet the following safety and electromagnetic compatibility (EMC) requirements:

Safety:	UL 1950, CSA C22.2 No. 950, 73/23/EEC, EN 60950, IEC 950, EN 60825
Electromagnetic Compatibility (EMC):	FCC Part 15, CSA C108.8, 89/336/EEC, EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024, AS/NZS 3548, VCCI V-3



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## Mode Switch Bank Settings and Options

This appendix covers the following items:

- Required tools ([Section B.1](#))
- Locations, functions, and settings for the mode switches ([Section B.2](#))

### B.1 REQUIRED TOOLS

Use the following tools to perform the procedures provided in this appendix:

- Antistatic wrist strap
- Phillips screwdriver



**CAUTION:** An antistatic wrist strap is required (provided with the module) to perform the procedures in this appendix. Use the antistatic wrist strap when performing any of the procedures in this appendix to minimize ESD damage to the devices involved.

## B.2 SETTING THE MODE SWITCHES



**CAUTION:** Read the appropriate sections to be fully aware of the consequences when changing switch settings.

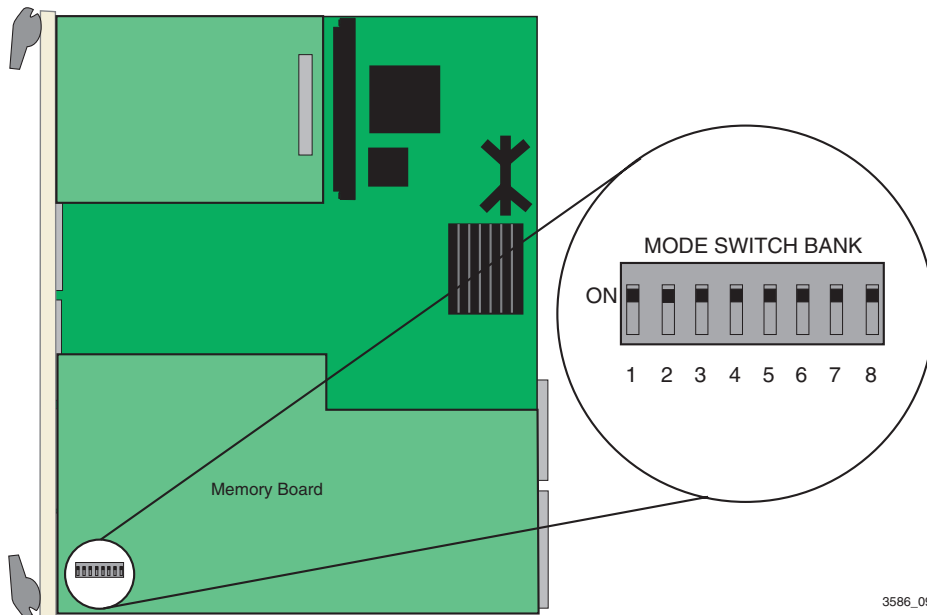
Only qualified personnel should change switch settings.

Figure 2-1 shows the location of the mode switches and the switch settings for normal operation. These switches are set at the factory and rarely need to be changed.

Switch definitions and positions are as follows:

- Switches 1 through 4 – For Enterasys Networks use only.
- Switch 5 – If the boot up diagnostics have been disabled, changing the position of this switch will enable them.

Figure B-1 Mode Switch Location



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- Switch 6 – No function.
- Switch 7 – Clear NVRAM. Changing the position of this switch resets NVRAM on the next power-up of the device. All user-entered parameters, such as the IP address, device names, etc., are reset to the factory default settings. Once the module resets, you can either use the factory default settings or reenter your own parameters.
- Switch 8 – Reset Password/Community Names. Changing the position of this switch clears user-entered passwords stored in NVRAM, and restores the factory default passwords on the next power-up of the device. Once the module resets, you can either use the factory default settings or reenter your own passwords.



**NOTE:** Do not change the position of Switch 8 unless it is necessary to reset the super-user configured passwords to their factory default settings.



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